

Example #11: A 35 kg mass falls 4.0 m to the ground.

- a) How much kinetic energy does it have when it strikes the ground?
- b) With what speed does it strike the ground?

$$\begin{aligned} \text{a) At start, } E_{\text{total}} &= E_p = mgh \\ &= 35(9.8)(4) \\ &= 1372 \text{ J} \end{aligned}$$

→ at bottom, $E_{\text{Total}} = E_k = 1.4 \times 10^3 \text{ J}$

$$\begin{aligned} \text{b) } E_k &= \frac{1}{2}mv^2 \\ 1372 &= \frac{1}{2}(35)v^2 \end{aligned}$$

$$v = 8.9 \text{ m/s}$$